

ART. II.—GUNSHOT WOUND OF NECK FOLLOWED
BY PARALYSIS OF CERVICAL SYMPA-
THETIC. INSANITY.

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OBservations of simple traumatic lesions of the cervical sympathetic are not such rarities as formerly, and one presenting merely the classic phenomena would not, perhaps, be of sufficient interest to justify its publication. The following case, however, is peculiar in that it exhibits a consequence of these injuries that has not, to my knowledge, been heretofore reported, and, imperfect as the record is in many respects, I do not hesitate to offer it to the profession.

Peter Kelly, aged 43, policeman, while in the performance of his duty, on the afternoon of Oct. 30th, 1874, received a pistol bullet wound in the neck. The ball, which was a small one, entered on the left side of the neck close to the anterior margin of the sterno-cleido mastoid muscle, between two and three inches above its lower insertion, and after passing backwards and a little downwards was lost in the tissues and never found. About six hours after the reception of the injury he was seen by Dr. L. H. Montgomery; was suffering considerably from shock, but rallied well, and under very simple surgical dressings, with occasional anodynes, the wound was healed up within a month and the man returned to duty. During this time Dr. Montgomery noticed a decided flushing of the left side of his face, but does not recollect or have notes of any special phenomena, such as alterations of the pupil, etc.

After the healing of the wound the redness of the left side of the face was still noticeable and at times it appeared almost purplish in spots. His wife reports also that now and then that side of the face would change so in appearance as to almost suggest a paralysis. There was also for a short time a peculiar appearance of the eyes, the right being the most prominent, probably from enophthalmus of the left. The gen-

eral health became impaired, the appetite was very poor, and about four or five months after the receipt of the wound, there began to be observed a change in his general demeanor and disposition; he grew careless and listless, and yet subject to violent fits of passion upon very slight irritation. He neglected his duty so that about this time or a little later he was discharged from the police force. He began to give evidence, also, of delusions, would sit by himself and mutter about shooting, had an idea that people must tell him their secrets, heard voices talking to him (which, however, he admitted to be hallucinations), and became very irritable and dangerous and sometimes, unprovoked, would attack his wife with whatever weapon was at hand. She noticed at these times that if she screamed loudly he would stop as if aroused to consciousness of what he was doing, and would sullenly sit down. This condition of things continued till the summer of 1877, he showing in the meantime, it is said, occasionally some signs of paralysis, and then he became so unmanageable, under the delusion that he was the Catholic Bishop of Chicago, that his wife had him arrested for her own protection.

In January, 1878 he was brought before the Cook County Court at Chicago to be tried, according to the law of the State, for insanity. Dr. Chas. E. Davis, to whom I am indebted for many of the preceding notes, was foreman of the jury, and carefully examined the patient. He was then listless in manner and complained of pains in shoulders and back and in his hips; his pupils were unequal, the right being the largest, and the left side of his face was redder than the other. No ptosis or other ocular symptom than the pupillary inequality was noted. He claimed to be of sound mind and insisted that he was the victim of a conspiracy on the part of his wife and his brother, but was adjudged insane on the facts above given. He succeeded, however, in obtaining a rehearing and was this time discharged as sane. The old symptoms continuing he was brought before the court a third time last November, was found insane and committed to the County Insane Asylum at Jefferson; where he is at the present time.

I had heard a brief account of this case, with others, written by Dr. Davis and read to the Chicago Medical Society just

after the first trial of Kelly for insanity, but did recognize it as the same when my attention was called to him at the asylum, by the Superintendent, Dr. Spray, when there on a visit last winter. The peculiarity in his appearance that then especially attracted my attention was an inequality in the two sides of his face, noticeable especially when the muscles of expression were called into play, the wrinkles and furrows between them being more prominent on the left side than on the right. There was also some difference in the color; the pupils were apparently equal, but Dr. Hagenbach, the assistant physician, stated to me that occasionally there was a marked difference. I could not then well examine the case, but on a recent visit, May 17th, the following points were noted:

Patient of medium size, light complexion, fairly nourished, and apparently in good physical health, and with all his bodily functions apparently in good order. It was utterly impossible to obtain from him any subjective symptoms, as he declared himself absolutely well in every respect. His insanity consisted apparently in delusions of grandeur together with ideas of persecution, he was suspicious and a little inclined to bluster, and it was not practicable to make a thorough physical examination for this reason. I could not put a thermometer into the external auditory meatus, nor could I trust it in his mouth; I was therefore compelled to satisfy myself with an observation with a surface thermometer, placed on the side of the face just forward of the ears. This could be relied on only for comparative results, as it was one of the elastic bulb thermometers which are affected by even slight pressure. But with this applied for equal times on both sides of the head, a difference of nearly a degree centigrade in favor of the left side was noted. The left side of the face and especially the pinna of the ear were redder than the corresponding parts on the right side. Since I had seen him before he had let his beard grow, covering a large part of his cheeks and the lower face, but there was still perceptible a difference in the folds or wrinkles when he talked or smiled. The pupils were apparently equal and reacted well to light, at the time of observation, and there was no ptosis. Contrary to my expectation he allowed an ophthalmoscopic examination to

be made; having undergone a similar one before he was not suspicious of it. It revealed nothing apparently abnormal; it was made under disadvantages, however, and was not altogether satisfactory. There was no tenderness on pressure in the cervical region,—at least he would admit of none. The heart sounds, as tested by Dr. Hagenbach, were pure; the pulse (taken sitting) was 80, full and compressible.

The scar of the wound was just barely visible, and by careful measurements by Dr. Spray, it was just on the anterior border of the left sterno-mastoid, and two and a half inches above the sterno-clavicular insertion. The bullet had probably cut some of the fibres of this muscle. It must have come very near the common carotid, and it is easy to see how it, in the course it appears to have taken, might have injured some of the fibres of the sympathetic, probably between the middle and inferior cervical ganglia.

On account of the phase of his insanity which has been mentioned, the patient was not a good subject for experiments, and it did not seem advisable to try the effect of drugs or of the reflexes on the condition of his pupil. I therefore asked the assistant physician, Dr. Hagenbach, to carefully observe it at different hours of the day for several days, which he very kindly did for me. The general results he states as follows: "In the ward, where the light is not strong, the right pupil usually a little the larger and more vacillating in size than the left. The difference is not very marked, but can be demonstrated, I think. When exposed to the direct rays from a lamp, both pupils contract equally well, and the vacillation is not noticed."

Other points in regard to which I asked him to observe, were the condition of the secretions, in respect to which nothing notable was remarked, except, perhaps, a greater dryness of the right side of the scalp, and the comparison of the two sides of the face, which I had not made to my own satisfaction. I had thought that there was a very slight hypertrophy of the left side, but Dr. Hagenbach held rather that the difference in the appearance of the two sides was due to a slight paralysis of the right, which made the muscles of the left side more prominent in their action. It is very

likely, also, if this is so, that there is a little atrophy on the right from the less use, and that inequality of the two sides actually exists. It is not enough however to be easily ascertained by measurements. Dr. Hagenbach writes me that he had considerable difficulty in making any close examinations, owing to the patient's suspicions.

This case seems to me to be as nearly one of uncomplicated injury to the cervical sympathetic as any I have seen recorded. Instances of this kind are very infrequently met with, since wounds that could involve the sympathetic in this region are almost certain to implicate other important organs, such as the carotids, which are in very close proximity. Cases of disturbance in the functions of the sympathetic from injuries to the spinal cord or brachial plexus, are comparatively common; but I have found the records of only five or six in which the phenomena of an independent lesion were observed. Such are those reported by Mitchell,* Bernhardt,† Kämpf,‡ Flensberg,§ perhaps one of Seeligmüller's,|| and those reported by Jewell;¶ all but the last of which are referred to by Eulenburg and Guttmann, in their essay on the Physiology and Pathology of the Sympathetic System of Nerves, published in the *Journal of Mental Science* for July and October, 1878, and January, 1879. In the case I have related, there is no history of any symptoms indicating the lesion of other important nerves than the sympathetic, while most of the evidences of its involvement that have been observed in other cases were present. Thus we have reddening and increased temperature of the left side of the face, and enophthalmus and myosis of the left eye. Other symptoms, such as ptosis, may have existed at one time, but the history is defective in many respects, and I have been careful to sift the testimony of unprofessional witnesses, and only give what appear to be indisputable facts.

* Injuries to Nerves.

† *Berliner klin. Wochensch.*, 1872, Nos. 47 and 48.

‡ Quoted by Eulenburg and Guttmann.

§ Quoted by Eulenburg and Guttmann.

|| *Berliner klin. Wochensch.*, 1872, No. 8.

¶ This journal, Jan., 1874.

The slight inequality of the two sides of the face, and the partial paralysis of the right side, are of interest. Inequality alone has been observed in other cases, such as those of Seeligmüller and Bernhardt; in these it was the side of the lesion that was emaciated. This is said to be the rule in the second stage of paralysis of the cervical sympathetic by Nicati,* who also says that the primary increase of temperature gives place to a decrease. This last was not observed by either Bernhardt or Seeligmüller, nor by myself in Kelly's case. In all the temperature was highest on the side of the paralyzed sympathetic. In Kelly, also, the disparity in the two sides of the face was in favor of the left—the side of the injury. The paralysis of the right half of the face, whatever there is of it, I can only suppose to be a remote consequence of the wound; perhaps due to secondary intra-cranial disorder.

The main interest in this case is, however, its connection with the mental disorder now manifested by Kelly. There is, so far as can be learned, no history of any special neurotic tendency, no heredity of insanity, and no previous symptoms indicating mental disorder existing anterior to the reception of the wound. His wife states that he was an entirely different man before the injury; and that a change was remarked very soon after, though long before insanity was suspected. There was, in fact, no known cause for the mental derangement other than the wound; and it appears to me a sequence that may not altogether unreasonably be considered a result. It is true that the majority of writers on the pathology of the sympathetic have not included insanity among the diseases due to disturbance of its function; yet if we are to consider the views of one of the most recent works† on mental disorders as well founded, this plays a most important part in their production. The special form of Kelly's insanity is much such as might be expected with the acceptance of Schüle's views, a kind of grand delirium, with ideas of per-

* "La Paralysie du Nerf Sympathetique Cervical." *Inaug. Diss.*, Zurich, 1873.

† Schüle: *Handbuch der Geisteskrankheiten.* Leipsic, 1878.

secution and suspicion. Although he did not present the physical symptoms of general paralysis, at least to any noticeable degree, his manner and general appearance was not unlike that of many paralytics that I have seen. His case, however, is not now, I believe, considered one of general paralysis, and may never develop into it.

The fact that other cases of paralysis of the cervical sympathetic do not result in insanity, is not conclusive in any way as regards the present one. Uncomplicated traumatic cases are too rare, and non-traumatic cases are too complicated with other morbid processes, as a rule, to permit of any generalizations. It must be remembered that other special causes of insanity, as well as of other ill-understood nervous diseases, such as tetanus, may occur many more times than their peculiar result. In cases of paralysis of the cervical sympathetic, it is not necessarily to be expected that the resulting cerebral hyperæmia will produce mental derangement; the intimate nutrition of the ultimate psychically functioning structures, which may or may not be seriously affected by the hyperæmia, must first suffer. But that it may have this effect, the case above related seems to me to be a clinical evidence of perhaps some value.
